DOCUMENT RESUME

ED 094 705 IR 000 899

AUTHOR Lloyd, John W.
TITLE Use of Business Simulations and Games in Higher Education.
PUB DATE 23 Oct 73
NOTE 20p.; Paper presented at the Rochester Area Colleges Workshop on the Use of Computers in Instruction (Rochester, New York, October 23, 1973)

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS Business Administration; *Business Education; Computer Programs; *Decision Making; Educational Games; *Management Education; *Management Games; *Simulation

ABSTRACT

Simulation and business games can meet the need to teach decision making in that they offer a dynamic context in which the results of a decision has to be lived with. This view was reached after a switch from business to higher education prompted a search for teaching methods more suitable and effective for business education than the lecture method. A business game was developed especially for a store management course and had the objective of making students recognize the importance of proper expense control and accurate profit determination in the operation of a retail business. Students are organized in teams and consider such factors as sales forecasts, payroll, advertising, and inventory in making their decisions. The results of the decisions appear on a computer printout. Computer business games seem more effective in motivating students and helping them understand business concepts. Details of the game as well as instructions are provided with some of the sheet material used in the game. (WH)

ED 094705

USE OF BUSINESS SIMULATIONS

AND

GAMES IN HIGHER EDUCATION

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

John W. Lloyd
Monroe Community College
October, 1973

IR 000 899

Several years ago when I left the world of business to enter the ivory tower of higher education, I was more than a little concerned with knowing how educators feel a professor should teach. Although my own undergraduate days occurred quite awhile ago, I recall that the lecture was the real stock and trade of almost all my professors. Remembering this, I felt if one of the Ivy League Colleges used an almost total lecture method that this must be the way to go.

It, indeed, was more than a little startling to subsequently read results of studies that indicate that the lecture method is one of the least effective techniques. The next burning question was, "If I don't lecture what do I do?" There are just so many movies that can be shown; it didn't seem quite cricket to have a test every other session; I had some other thoughts but none of them added up to occupying the time available in a meaningful way. I then started searching for suitable alternatives. Case studies seemed appropriate for use in business courses, so I read a number of publications that dealt with them. Harvard Business School has pioneered this area and has tremendously influenced the number and types of cases that are available.

After a bit of floundering, I decided that a combination of lecture, discussion, case studies, and tests was the best approach. This launched me into college teaching. It worked pretty well but I continued to look for other alternatives. Fortunately, I learned that there was going to be a <u>Special</u>

Institute for Business Technology Faculty the following summer. This was held at Rochester Institute of Technology and was almost totally devoted to the use of computers in education. The objectives of this institute were to:

1. "Provide two-year college business technology faculty with educational experiences that explore the utilization of computers as a medium of instruction."
2. "Increase teaching effectiveness by using the computer as a medium of instruction."
3. "Develop leadership to initiate change in teaching methods."
4. "Explore and/or develop other teaching methods that would provide more individualized instruction for the students."
5. "Provide information about computer information systems."

I attended this particular institute and an advanced program the following summer. Both summers I learned a lot about computers and their capabilities. About a quarter of the time was spent on simulations and games. As a result, I became convinced that this was an innovative approach that would fit well into a two-year college business program.

Since attending these institutes, I have investigated the simulations that are available. One, in particular, that I felt was appropriate for use in marketing courses is Marketing in Action: A Decision Game, Ralph L. Day, Richard D. Irwin Inc., Homewood, Illinois.

Two years ago I used this game in a course I was teaching. One of the things that encouraged me to use this game was the author's introduction. It clearly emphasizes why this approach is especially relevant for students in business administration. I'd like to quote this introduction for it "says it all."

> "Students of business administration spend a lot of time preparing themselves for decision-making responsibilities in business. They study the institutional environment in which business operates. They become familiar with some of the problems of business and study the methods businessmen use to deal with these problems. In courses in which case materials are used, students are required to assume the role of a businessman in the context of a real-life situation and make a choice among alternative courses of action, i.e., make decisions. However, the traditional methods of education for business never provide the student the opportunity to live with the decisions he has made, to test the effectiveness of these decisions in terms of results, to recognize and rectify mistakes, and adjust to changing circumstances in a competitive environment. In brief, traditional methods do not provide a dynamic context for the study of business problems."

> "The educational simulation or "business game" has emerged in the past decade as a valuable means of supplementing the usual approaches to the teaching of business administration. The business game provides a dynamic environment for decision-making, allowing the student to see more clearly the meaning and relevance of the knowledge he has gained from other kinds of study. While educational simulations involve many simplifications which keep them from fully duplicating the circumstances facing actual managers, they capture much of the essence of real business situations and provide valuable practice in making managerial decisions."

Professor Day has stated the case of using business games well. After using his game, I feel as he does, that the business

game adds a new and exciting dimension to the educational process. I still continue to lecture, show movies, use case studies, and other tried and true educational methods, but I honestly believe that the business game has helped me to be a more effective teacher. The students get "turned-on" by the challenge of making decisions and living with the results. For any of you who have not looked in this direction, I recommend strongly that you check to see if they would apply to your situation.

Perhaps you may have looked for a business game of a particular specialized nature. I have tried to find one that would be appropriate for use with my retail business management students. There was nothing that I could find that directly dealt with the arear that I felt students should understand. So I spent the last year building my own game. It really isn't something that will re-structure the world of higher education but it does accomplish the goals I had in mind.

I don't want to spend a lot of time giving you all of the details of the game, but perhaps it is wise to spend a few minutes describing the game and how it works.

The title is Retail Business Management: A Management Decision-Making Game. It was developed for use in a course called Store Management. The overall purpose of the game is to provide students with knowledge of the importance of proper expense control and accurate profit determination in the operation of a retail business. The specific behavioral objectives

of the game are to enable students to:

1. List and classify financial information and prepare a monthly profit and loss statement.
2. Use available data to prepare a quarterly balance sheet for the business.
3. Use available figures and information to determine sales forecast, inventory needed, advertising and promotion budget, and payroll expense.
4. Determine the impact on profitability of various business decisions through analysis of computer printout data.
5. Utilize the computer printout information to decide what corrective action should be taken to insure the optimum profit level.

The following page (overhead transparency) is a schematic diagram of the system model. As can be seen, there are four input variables: 1) Sales Forecast 2) Payroll 3) Advertising 4) Beginning Inventory. This diagram is used to show students the interrelationship of these factors and other exterior influences that must be considered in the operation of any business. The sales forecast, payroll expenditures, advertising outlay and merchandise inventories all must be properly coordinated if the store manager is to end up with the desired profit level.

To be sure that I don't omit any important details on the instructions given the teams, I'm going to repeat the instructions as they are written in the game manual.

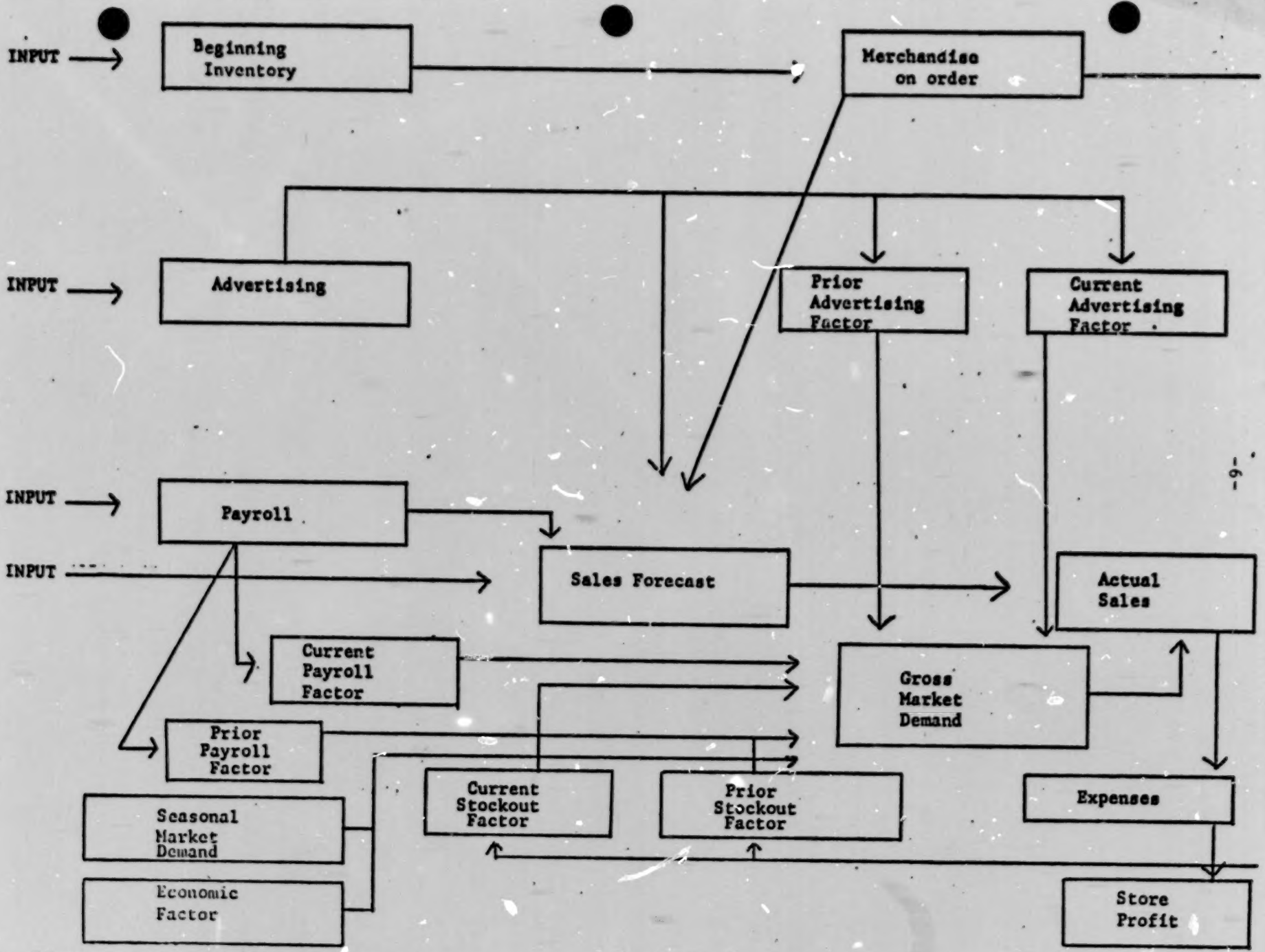

Figure 1 - Schematic Diagram of System Model

Game Instructions and Information

Management Responsibilities

Students will be assigned to a specific store management team. Usually there will be three to five people in each team. Jointly they will act as store manager. Each team will be given the responsibility for the complete operation of the business, within the limits established by Mr. Mulligan.

The basic purpose of the game is to provide students with a knowledge of the importance of proper expense control and accurate profit determination in retail business management.

It is felt that this simulates an actual business situation and provides participants with a competitive game that relates one team's performance to that of all of the other teams. There will be a minimum of two and a maximum of nine teams playing at one time.

Administrative Details

1. Predicting Sales and Merchandise Inventory

On a monthly basis each team will analyze available financial and economic data. After reviewing this information each team completes a "Store Management Decision" sheet. (Form #1) The main thrust of the game will involve accurate forecasting of the following month's sales and being certain that there is a sufficient inventory of merchandise that will enable enough of you to arrive at your predicted sales volume. It is equally important to not be overly optimistic or pessimistic in establishing the expected sales that are to be achieved. Under stating

of expected sales volume will result in abnormally high inventories which will be an unnecessary cost to the firm. This added cost will result both from interest on funds tied up in inventory as well as markdowns in subsequent months.

2. Predicting Advertising Expenditures

At the time the "Store Management Decision" sheet is completed each team will be required to determine the amount (in dollars) of advertising that they feel is appropriate. Obviously the amount of advertising should be related to the forecast of sales volume. Too little advertising will lead to the store not achieving its projected sales volume. Too much advertising will mean that money is being wasted on an expense that produces no additional income for the store.

3. Payroll Expense

The remaining variable that each team must carefully consider is payroll expense. It is important that each team relate the dollars of payroll to the sales forecast. Unduly low payroll expenditures will mean that the projected sales volume will not be achieved. High payroll expense will directly affect the overall store profit.

The measure of success of each team's performance will depend on the profit that is earned.

See Figure 1 - "Schematic Diagram of System Model." This diagram indicates the interrelationship of the variables in the game.

To focus attention on the three key variables - accurate

forecasting of sales, proper merchandise management, and careful control of advertising and payroll expense - the following items will be held constant as a percentage of sales:

Item	%
Returns and adjustments on merchandise sold	5
Returns and adjustments on merchandise purchased	4
Transportation charges on purchases	1.5
Gross cost of merchandise sold	56.
Workroom costs	1
Operating expenses (other than transportation charges workroom costs, advertising expense and payroll.)	13.

Inventory

In theory an inventory carry over of exactly zero would maximize the store profit, however, in actual retail business management, it is necessary to have an inventory carry over to insure that sales will not be lost. In this situation 30% of the sales forecast for the following period should be the amount of inventory that is unsold at the beginning of the next operating period (month).

Merchandise on Order

Normally it takes several weeks between the time merchandise must be ordered in the preceding period to insure that it will be available for sale in the current period (month).

Proper merchandise management is extremely important in the successful operation of a retail business. The carrying of too much inventory adds to the cost of doing business. It costs a store 6% for all dollars invested in excess inventory.

Inadequate inventory leads to an out-of-stock situation which results in lost sales. For each 5% that the inventory

falls below the 30% level, there will be a 2% loss in sales in the current month and a 1% loss in sales in the following month.

Advertising

The main impact of money spent on advertising is in the month that the expense occurs. 15% of the money expended does have a carry over effect.

There is a direct relationship between the amount of money spent on advertising and the sales that an individual store is able to achieve.

Payroll

In view of the extremely competitive situation in ski and bicycle retailing, and also due to the fact that every successful ski and bicycle store increases sales by having the proper number of well trained employees available to serve customers, adequate sales and service personnel is vital.

Since payroll costs are a particularly significant influence on store profitability it is important to control the amount of dollars that are spent on payroll. Inadequate staffing leads to lost sales in the current period as well as a carry over loss in the following period. For each 1% payroll expense that falls below the optimum level a 10% loss in sales will occur in the current month and half this amount in the next period.

Seasonal Market Demand

Retail managers must consider the seasonal variations in

business activity in forecasting sales and in determining the amount of money to be spent on merchandise, advertising, and payroll.

A table indicating the amount of seasonal variation is provided for use in the decision-making process (Figure 2, page 13).

Economic Factor

In recent years there has been an average increase of about 5% in retail business in the United States. It is expected that this general trend will continue in the future. Therefore, a 5% yearly increase is felt to be realistic in projecting future sales activity.

Store Management Decision Results

After a team completes its decision sheet, it is to be given to the instructor. The instructor will then feed this information into the computer. The computer will analyze the information and determine the appropriateness of each of the decisions. A computer printout will be obtained and the instructor will complete the results section of the Store Management Decision sheet. These results will indicate the following:

1. Actual sales obtained.
2. Actual share of the market for each of the firms.

Profit and Loss Statement

Using the results of the information and required data provided in the game description, each team will prepare an Income and Loss Statement (Form #2, page 15). This will indicate the

net profit - before Federal Income Tax for that particular month.

Figure 2 - Seasonal Market Demand

Decision	Time Period	Seasonal Business Activity Index
1	January	100
2	February	95
3	March	102
4	April	106
5	May	110
6	June	118
7	July	104
8	August	114
9	September	120
10	October	110
11	November	122
12	December	128
13	January	104
14	February	98
15	March	107
16	April	111
17	May	115
18	June	123
19	July	109
20	August	119
21	September	125
22	October	115
23	November	127
24	December	133
25	January	108
26	February	102
27	March	111
28	April	115
29	May	119
30	June	127
31	July	113
32	August	123
33	September	129
34	October	119
35	November	131
36	December	137

Company _____

Time Period _____

Store Management Decisions

	Skiis	Ski Equipment	Clothing	Bicycles	Bicycle Equipment	Total
Sales Forecast						
Beginning Inventory						
Purchases						
Available for Sale						

Advertising Expenses

Monthly Cost						

Payroll Expense

	Hrs	Dollars	Hrs	Dollars	Hrs	Dollars	Hrs	Dollars	Hrs	Dollars	Hrs	Dollars
Management - Buying												
Sales												
Sales Supporting												
Total												

(This section to be completed by the instructor)

Decision Results _____

Actual Sales Volume _____

Percentage Share of the Market Firm 1- 2- 3- 4- 5- 6- 7- 8- 9-

Form #1

Profit and Loss Statement

Ace Ski and Bike Shop

Time Period

	Dollar Amount			%
Total Sales				
Less Returns from Customers				
Net Sales				
Opening Inventory				
Gross Purchases				
Less Returns				
Net Purchases				
Transportation Charges				
Total Purchases				
Total Merchandise Handled				
Closing Inventory				
Gross Cost of Merchandise Sold				
Cash Discounts Earned				
Net Cost of Merchandise Sold				
Gross Workroom Costs				
Less Workroom Receipts				
Total Merchandise Costs				
Gross Margin				
Operating Expenses				
Salaries and Wages				
Advertising				
Other Operating Expenses				
Total Expenses (other than merchandise)				
Net Profit - before Federal Income Tax				

Balance Sheet

Ace Ski and Bike Shop

Time Period

Assets:

Current assets:

Cash

Accounts Receivable

Less Allowance for Uncollectible

Inventories (at actual cost or current cost whichever is lower)

Fixtures and Equipment (after Depreciation)

Total Assets:

Liabilities and Net Worth:

Accounts Payable

Estimated Income Tax Payable

Salaries and Wages Payable

Interest Payable

Loans or Notes Payable

Total Liabilities

Net Worth:

```
// EXEC

                COMPANY   1

FORCAST OF                      48000.
COMPANY GROSS SALES             25455.
ADVERTISING EXPENSE              1800.
INVENTORY EXPENSE               36000.
BEGINNING INVENTORY             14000.
NEXT PERIOD INVENTORY           36000.
EXCESSIVE INVENTORY COST            0.
PROFIT ON SALES                  2291.
CASH ASSETS                     23191.
PAYROLL EXPENSE                  5300.
                COMPANY   2

FORCAST OF                      55000.
COMPANY GROSS SALES             30172.
ADVERTISING EXPENSE              1100.
INVENTORY EXPENSE               35000.
BEGINNING INVENTORY             28000.
NEXT PERIOD INVENTORY           46405.
EXCESSIVE INVENTORY COST         3506.
PROFIT ON SALES                  2715.
CASH ASSETS                     24504.
PAYROLL EXPENSE                  5200.
```

FORCAST OF	45000.
COMPANY GROSS SALES	13636.
ADVERTISING EXPENSE	2000.
INVENTORY EXPENSE	55000.
BEGINNING INVENTORY	7500.
NEXT PERIOD INVENTORY	55000.
EXCESSIVE INVENTORY COST	0.
PROFIT ON SALES	1227.
CASH ASSETS	-3448.
PAYROLL EXPENSE	5175.

COMPANY 5

FORCAST OF	45000.
COMPANY GROSS SALES	14545.
ADVERTISING EXPENSE	1800.
INVENTORY EXPENSE	50000.
BEGINNING INVENTORY	8000.
NEXT PERIOD INVENTORY	50000.
EXCESSIVE INVENTORY COST	0.
PROFIT ON SALES	1309.
CASH ASSETS	2059.
PAYROLL EXPENSE	5450.

That pretty well indicates where I started and the point I'm at now in using games and simulations. I'd be remiss if I didn't point out that any of the business games that I've seen have their limitations. They aren't a real life business management situation but they come a lot closer than anything else. The use of computer business games has some significant advantages for educators:

1. Students, generally speaking, like them.
2. They complement other instructional methods.
3. Students seem to better understand important business concepts.
4. As the student team members cooperate in making decisions, they learn from each other.
5. In addition to helping students understand management concepts, games can be developed that help them to understand accounting and financial data.

The use of business games is not a universal remedy that will insure that students learn the concepts we think are important, but I honestly feel that they can and do help. I want to be a good, interesting, and competent teacher; computer games aid me in this quest.